AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (Cancelled).

2. (Currently amended) A method, comprising:

accumulating photocarriers in each of a plurality of photocarrier integrators ~~at different times~~; and successively enabling each of said plurality of photocarrier integrators ~~at different times~~ to connect ~~said photocarrier integrators~~ to a ~~pinnedphotodiode~~ common photodiode, each of said photocarrier integrators connecting to said common photodiode through a respective photodiode output port, said plurality of photocarrier integrators accumulating photocarriers generated by said photodiode during different time periods from one another.

3. (Currently amended) A method as in claim 2, wherein said enabling comprises actuating a gate that is connected between each said photocarrier integrator and said ~~diode~~ photodiode.

4. (Currently amended) A method as in claim 3, further comprising, after said enabling, detecting a number of carriers accumulated in said ~~diode~~ photodiode during at least two of said time periods by detecting the number of photocarriers accumulated in at least two said photocarrier integrators.

5. (Currently amended) A method as in claim 3, wherein said ~~diode~~ photodiode is a pinned photodiode, and further comprising, after said enabling, detecting a number of carriers accumulated in said pinned photodiode during at least two of said time periods by detecting the number of photocarriers accumulated in at least two said photocarrier integrators.

6. (Currently amended) A method as in claim 2, wherein there are four of said photocarrier integrators, and said successively enabling comprises using a first photocarrier

integrator to accumulate ~~carriers~~ photocarriers between ~~a time~~ times 0 and $\pi/2$, a second photocarrier integrator to ~~integrate~~ accumulate photocarriers between times $\pi/2$ and π; a third photocarrier integrator to ~~integrate~~ accumulate photocarriers between times π and $3\pi/2$, and a fourth photocarrier integrator to ~~integrate~~ accumulate photocarriers between times $3\pi/2$ and 2π ~~time slots~~.

7. (Currently amended) A method as in claim 2, further comprising detecting ~~light from said photodiode which corresponds to~~ a phase shift of light received by said photodiode by detecting accumulated charge in at least two said photocarrier integrators.

8. (Withdrawn) A system, comprising:

a pinned photodiode having a photodiode area;

a plurality of gates, each of said plurality of gates having one end coupled to said photodiode area; and

a plurality of photocarrier integrator elements, each of said photocarrier integrator elements coupled to the other end of each of said plurality of gates.

9. (Withdrawn) A system as in claim 8, further comprising a control input on each of said plurality of gates, enabling connection of a respective photocarriers integrator elements to said photodiode area.

10. (Withdrawn) A system as in claim 9, further comprising a controller element which drives said control input controlling said plurality of gates such that no more one of said control element is active at any time.

11. (Withdrawn) A system as in claim 10, wherein there are four of said photocarrier integrator elements, and wherein said controller element successively enables a first integrator to accumulate carriers between a time 0 and $\pi/2$, a second photocarrier integrator to integrate between $\pi/2$ and π; a third photocarrier integrator to integrate

between π and $3\pi/2$, and a fourth photocarrier integrator to integrate between $3\pi/2$ and 2π time slots.

12. (Currently amended) A method, comprising:

generating photocarriers in a photodiode within a pixel during a plurality of time periods;

accumulating ~~photo-carriers~~ photocarriers in each of a plurality of photocarrier integrators ~~at different times~~ within said pixel such that each photocarrier integrator accumulates photocarriers generated during a time period different from a time period in which other photocarrier integrators accumulate photocarriers; and

sampling said ~~photo-carriers~~ photocarriers from said photocarrier integrators ~~in the common to die~~;

determining a range of an object using said sampled photocarriers.

13. (Currently amended) A method as in claim 12, further comprising controlling each of said photocarrier integrators to be connected to said photodiode ~~at different times~~ during said different time period.

14. (Currently amended) A method as in claim 13, wherein said controlling comprises enabling a gate, said gate being connected to said photodiode and to one of said photocarrier integrators.

15. (Currently amended) A method as in claim 14, wherein there are four of said photocarrier integrators, and wherein said enabling comprises successively enabling a first photocarrier integrator to accumulate ~~carriers~~ photocarriers between ~~a time~~ times 0 and $\pi/2$, a second photocarrier integrator to ~~integrate~~ accumulate photocarriers between times $\pi/2$ and π; a third photocarrier integrator to ~~integrate~~ accumulate photocarriers between

times π and $3\pi/2$, and a fourth photocarrier integrator to ~~integrate~~ accumulate photocarriers between times $3\pi/2$ and 2π ~~time slots~~.

16. (Currently amended) A method as in claim 12, wherein there are four of said ~~photo carriers~~ photocarriers integrators, and said sampling comprises sampling photo carriers which are 90 degrees out of phase with one another.

17. (Currently amended) A method, comprising:

sampling a plurality of different samples of light in a photodiode, each of said plurality of different samples being 90 degrees out of phase with one another; and

successively gating photocarriers representing each of said different samples from said photodiode through a respective output port, each output port associated with a respective photocarrier integrator, such that each photocarrier integrator accumulates a different sample than other of said photocarrier integrators.

18. (Currently amended) A method as in claim 17, further comprising detecting a phase shift ~~of the detecting~~ using said samples of light.

19. (Currently amended) A method as in claim 17, wherein there are four different gates ~~attached to the~~ connected to said photodiode each ~~detecting~~ gating a different sample.

20. (Currently amended) A method as in claim 17, wherein there are four photocarrier integrators, and wherein said ~~sampling~~ act of gating comprises successively enabling a first photocarrier integrator to accumulate ~~carriers~~ photocarriers between ~~a time~~ times 0 and $\pi/2$, a second photocarrier integrator to ~~integrate~~ accumulate photocarriers between times $\pi/2$ and π; a third photocarrier integrator to ~~integrate~~ accumulate photocarriers between times π and $3\pi/2$, and a fourth photocarrier integrator to ~~integrate~~ accumulate photocarriers between times $3\pi/2$ and 2π ~~time slots~~.

21. (New) A method of operating a range finding sensor, the method comprising:

providing a plurality of photodiodes, each photodiode having a first output port for switchably coupling each respective photodiode to a first photocarrier integrator in a same pixel as said photodiode and a second output port for switchably coupling each photodiode to a second photocarrier integrator in a same pixel as said photodiode;

generating first photocarriers in said photodiodes in response to light received during a first time period;

transferring said first photocarriers to respective first photocarrier integrators via said first output ports;

generating second photocarriers in said photodiodes in response to light received during a second time period; and

transferring said second photocarriers to respective second photocarrier integrators via said second output ports.

22. (New) The method of claim 21, further comprising outputting said first photocarriers from first photocarrier integrators and outputting said second photocarriers from second photocarrier integrators.

23. (New) The method of claim 22, wherein the act of outputting said first photocarriers comprises summing outputs of all of said first photocarrier integrators, and wherein the act of outputting said second photocarriers comprises summing outputs of all of said second photocarrier integrators.

24. (New) The method of claim 21, further comprising counting the amount of photocarriers in said first photocarriers integrator and counting the amount of said second photocarriers in said second photocarrier integrator.

25. (New) The method of claim 24, further comprising determining a range of an object using the results of said acts of counting.

26. (New) The method of claim 21, wherein said act of providing a plurality of photodiodes includes providing said plurality of photodiodes within a common pixel.

27. (New) The method of claim 21, wherein said act of transferring said first photocarriers comprises transferring said first photocarriers to respective first output drains by operating first gates connected to said photodiodes and said first output drains, and wherein said act of transferring said second photocarriers comprises transferring said second photocarriers to respective second output drains by operating second gates connected to said photodiodes and said second output drains.

28. (New) The method of claim 21, wherein each photodiode further has a third output port for switchably coupling each photodiode to a third photocarrier integrator in a same pixel as said photodiode and a fourth output port for switchably coupling each photodiode to a fourth photocarrier integrator in a same pixel as said photodiode, and further comprising:

generating third photocarriers in said photodiodes in response to light received during a third time period;

transferring said third photocarriers to respective third photocarrier integrators via said third output ports;

generating fourth photocarriers in said photodiodes in response to light received during a fourth time period; and

transferring said fourth photocarriers to respective fourth photocarrier integrators via said fourth output ports.

29. (New) The method of claim 28, further comprising outputting said first photocarriers from said first photocarrier integrators, outputting said second photocarriers

from said second photocarrier integrators, outputting said third photocarriers from said third photocarrier integrators, and outputting said fourth photocarriers from said fourth photocarrier integrators.

30. (New) The method of claim 29, wherein the act of outputting said first photocarriers comprises summing outputs of all of said first photocarrier integrators, wherein the act of outputting said second photocarriers comprises summing outputs of all of said second photocarrier integrators, wherein the act of outputting said third photocarriers comprises summing outputs of all of said third photocarrier integrators, and wherein the act of outputting said fourth photocarriers comprises summing outputs of all of said fourth photocarrier integrators.